

Since it seems thus established, that the fœtus is nourished without a placenta, the source of the gelatinous matter provided for its nourishment becomes a natural object of inquiry. In birds the albumen of the egg, which corresponds with this jelly, is formed in a tube called the oviduct, and the lateral canals, which open into the cavity of the uterus of the wombat and kangaroo near its neck, bear a strong resemblance in their form to the oviducts of birds; and in the kangaroo they were found, in the impregnated state, to be enlarged, and to have a very free communication with the uterus; circumstances which induce the author to believe their sole use is to form the jelly, and to deposit it in the uterus.

On the Origin and Office of the Albumen of Trees. In a Letter from Thomas Andrew Knight, Esq. F.R.S. to the Right Hon. Sir Joseph Banks, Bart. K.B. P.R.S. Read June 30, 1808. [Phil. Trans. 1808, p. 313.]

Mr. Knight having, by his former experiments on this subject, established to his satisfaction that the bark of trees is not converted into albumen, but that the albuminous matter is deposited by a fluid which descends from the leaves, and is subsequently secreted through the bark, proceeds to inquire into the origin and office of the albuminous tubes.

In the succulent shoot of the horse-chestnut it may be seen, that the albuminous tubes are arranged in ridges beneath the cortical vessels, and the number of these ridges at the base of each leaf corresponds with the number of apertures which pass from the leaf-stalk. The position and direction of these tubes have induced naturalists to consider them as passages through which the sap ascends; but Mr. Knight intends to show that they are reservoirs of fluid secreted by the bark, which they retain till it is absorbed by the surrounding cellular substance. Having ascertained, by injections, that the albuminous tubes which descend from the base of an annual shoot are confined to one side of the stem, and to the external annual layer of wood, Mr. Knight made deep incisions at the bases of many annual shoots of young trees, in such a manner as certainly to intercept all communication with the stem by means of the albuminous tubes; but the shoots lived, and in the succeeding spring grew with considerable vigour. In some small twigs, two incisions were made on opposite sides, one a few lines higher than the other, so that all the albuminous tubes might, in some part of their course, be interrupted; yet the sap continued to pass into the branches, and their buds unfolded in the succeeding spring.

All naturalists agree in stating that trees perspire most during summer, when the leaves have attained their full growth; but as the albuminous tubes at that time appear dry and filled with air, it is evident that the tubes do not convey the sap, but are intended to execute a different office.

But if the sap does not rise through the albuminous tubes, says

Mr. Knight, it must pass the cellular substance ; and to show that the cellular substance is pervious to fluids, he quotes an instance from a preceding communication, in which bark was generated on the surface of the cellular substance of pollard oaks. A new experiment is also related in confirmation of this opinion. Various branches of two years old were cut from different trees ; and after the cut surface had been covered with a cement impermeable to water, a portion of the bark was detached from each, so as to expose the surface of the alburnum. They were then immersed in coloured infusions for twenty hours, and were found to have imbibed the colour between the alburnous tubes, apparently through the cellular substance.

When an incision is made into the alburnum near the root, and sap is seen to flow from it, it may be observed to run even more abundantly from the upper surface of the incision ; and since the quantity which exudes is full a hundred times more than was previously contained in the alburnous tubes, it appears evident that it is raised through some other channel.

Mr. Knight concludes, therefore, that the sap ascends through the cellular substance, and conceives that part to be so organized as to permit the sap to escape more readily *upwards* than in any other direction ; and, by its alternate contraction and expansion, to be fully capable of propelling the sap with all the impulse which it is known to have in the spring.

The alburnous tubes appear to the author to answer also another purpose, since their cylindrical form occasions the strength of the materials employed to be the greatest possible.

The author concludes by observing, that though he retracts an opinion formerly entertained respecting the ascent of sap through the alburnous tubes, yet his opinions concerning its subsequent motion through the central vessels, leaves, and bark, remain unchanged.

Eclipses of the Satellites of Jupiter, observed by John Goldingham, Esq. F.R.S. and under his Superintendance, at Madras, in the East Indies. Read June 30, 1808. [Phil. Trans. 1808, p. 322.]

Mr. Goldingham's observations are prefaced by a short account of the instruments employed, and some general remarks upon the circumstances necessary to be attended to, in drawing inferences from them. Two telescopes were employed, both made by Dollond, of $3\frac{1}{2}$ feet focal length, with a magnifying power between 70 and 80 ; and the time observed by a good clock, with gridiron pendulum, was deduced from the transit of the sun nearest to the eclipse, and verified by the next preceding or following transit.

The longitude of the place of observation is given, as determined from numerous observations of various kinds, that it may be compared with that deduced from each eclipse by means of the time given in the ephemeris.

In noting each observation, the state of the weather is attended to,